UNDERSTANDING CHANGES AND FUTURE ORIENTATIONS IN DESIGN

A THESIS
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MASTER OF FINE ARTS

By
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June, 2003

I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Fine Arts.

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ABSTRACT

UNDERSTANDING CHANGES AND FUTURE ORIENTATIONS IN DESIGN

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In this study, future orientations in design are proposed. Futures Studies as a field of research on building plausible futures scenarios and proposing policy alternatives for achieving these scenarios in socio-technologic perspectives is analyzed and integrated into design. Design and its expanded relation with technology and social, cultural contexts are examined for having an in-depth understanding of current approaches in design. Under current approaches, design of material objects versus design of immaterial structures, design as process of interaction, localization and customization, enjoyment and pleasure as a part of function, and finally creation of needs and future consumers are presented. In the light of these current approaches, future orientations in design theory, design profession, and design education are obtained.

Keywords: Design Theory, Product Design, Futures Studies, Scenario Building

ÖZET

DEĞİŞEN TASARIM ANLAYIŞLARI VE TASARIMDA GELECEĞE YÖNELMELER

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İç Mimarlık ve Çevre Tasarımı Yüksek Lisans Programı
Danışman: Yardımcı Doç. Dott.-Arch. Markus Wilsing
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Bu çalışmada, tasarım için geleceğe yönelmeler öngörülmüştür. Gelecek çalışmaları, amacı sosyo-teknolojik perspektiflerde ileriye dönük olası senaryolar oluşturmak ve bu senaryolara ulaşmak için karar alternatifleri önermek olan bir araştırma dalı olduğu için incelenmiş ve tasarıma entegre edilmiştir. Tasarima yönelik yeni yaklaşımları derinlemesine anlayabilmek için tasarımın teknoloji ve sosyal, kültürel alanlarla genişleyerek kurduğu ilişkiler araştırılmıştır. Yeni yaklaşımlar altında, fiziksel objelerin tasarımına karşın fiziksel olmayan yapıların tasarımı, çok yönlü ilişki kurma süreci olarak tasarım, kişiselleştirme ve özelleştirme, fonksiyonun bir parçası olarak eğlence ve zevk, ve son olarak gelecekteki ihtiyaçların ve tüketicilerin yaratılması sergilenmiştir. Bu yeni yaklaşımlar ışığında tasarım teorisi, tasarım mesleği, ve tasarım eğitimi için geleceğe yönelmeler elde edilmiştir.

Anahtar Kelimeler: Tasarım Teorisi, Ürün Tasarımı, Gelecek Çalışmaları, Senaryo Yapılandırma

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1. INTRODUCTION

1.1. The Aim and Scope of the Thesis

We are surrounded by objects, which are changing every day and being replaced by new ones constantly. In a world, where "anything and everything is a product" (Holt 21) what are changing are not only the objects but anything associated with them: their forms, functions, use, technology, etc. Although everyday new objects get into our lives, their role and meaning in relation to the society are the key aspects what makes them new. And when we see objects as an answer for the needs of the society, or as a reflection of the developments in the technology, one may conclude that the change occurs in a larger scale and in a wider context. It is not only the products, but also it is we, or it is today, what is new and what is different than the past.

As today is different than the past, the same will be for the future. Moreover, the change also occurs in the way we understand and approach to the future because of the accelerating pace of change. The change in our lives, in the dynamics of society, and in technology makes the distance between today and tomorrow shorter and shorter. In the past, changes were following the innovations, however "[a]s we reach the time when the rate of change equals that of innovation" (Nadin 40), it became obvious that the future will not be the same, what it used to be. As the future gets closer to us, we became more concerned about the future and we try to understand what will come next and try to work for the creation of better futures.

Drawing our attention to design "not only as a professional practice but also as a social, cultural, and philosophical investigation" (Buchanan and Margolin ix), we can understand the necessity of change in the field of design in relation to the wider context, where changes take place today and in the future. "Design becomes a way of discussing life since it is a way of discussing society, politics, eroticism, food and even design" (Wilsing and Sonkan 414) and thinking about the future of every aspects related with design is therefore quite important for drawing the picture of the future for design, which constitutes the general aim of the thesis.

Today, it is becoming an important issue for the design profession to meaningfully combine features, objects, materials, technologies, and ideas, which were previously considered to be separate. As design is a practice integrating different needs of art, business, and engineering, it seems that total infiltration of human environments with combinatory thinking will be the path for design (Holt 22). Moreover, thinking of solid products and everyday objects no longer define the meaning of design. According to Buchanan,

> "As an instrument of cultural life, design is the way we create all of the artifacts and communications that serve human being, striving to meet their needs and desires and facilitating the exchange of information and ideas that is essential for civil and political life. Furthermore, design is the way we plan and create actions, services, and all of the other humanly shaped process of public and private life" (Human Dignity 38).

For this reason, changing understandings of design may be better understood as the analysis of expanding and integrating areas for which design is supposed to serve and meanwhile, which are shaping the new boundaries of design for the future.

As the meaning of design expands through the changes in the society and technology, analysis of design needs to spread its roots accordingly to the areas where the change and the future are discussed in a broader perspective. Therefore, with the aim of understanding the future of design, a general area of study on the future, namely futures studies is analyzed. Although constituting the main content of the second chapter and being discussed in a broader sense, one may refer to Bell's definition of Futures Studies as "a new field of inquiry that involves systematic and explicit thinking about alternative futures. It is a growing body of work that is based on distinctive perspectives and assumptions and that utilizes specific theories, methods, and values. It aims to demystify the future, to make possibilities for the future more known to us, and increase human control over the future" (Foundations 2).

As argued by Bell, "[f]utures studies, which is distinctively transdisciplinary, is still being shaped and its own future would be enhanced in methods, concepts, theory, and substance by contributions from other disciplines" (Foundations xxii). Accordingly, looking at futures studies from a design perspective is going to both enhance the areas of futures studies and help to bring about a future perspective for design. The scope of the thesis in this respect constitutes drawing the relations between futures studies and design studies and integrating them to understand the future of design. As futures studies are very much related with achieving futures scenarios, where the effects of today's changes are discussed in future circumstances, another aim of the study is to draw plausible futures scenarios on the potential changes in the nature and philosophy of design.

1.2. Structure of the Thesis

The structure of the thesis, or the content and the organization of the chapters, finds its roots in Ogburn's theory of social change. As Jaffe puts it,

> "Ogburn's theory of social change emphasized the role of invention. For him, change in modern world typically followed a casual sequence beginning with some technological invention or innovation. The technological change, in turn, produced change in social institutions-such as the family or government. Finally, according to Ogburn, changing social institutions produced change in people's social philosophy, that is, in their beliefs, attitudes, and values. He would also argue that the sequence was sometimes circular, with social philosophies altering the demand for certain types of inventions and, thus, leading to technological change and starting the casual sequence over again" (qtd. in Bell 8).

This definition may be better understood if the terms are placed in a diagram as shown below.

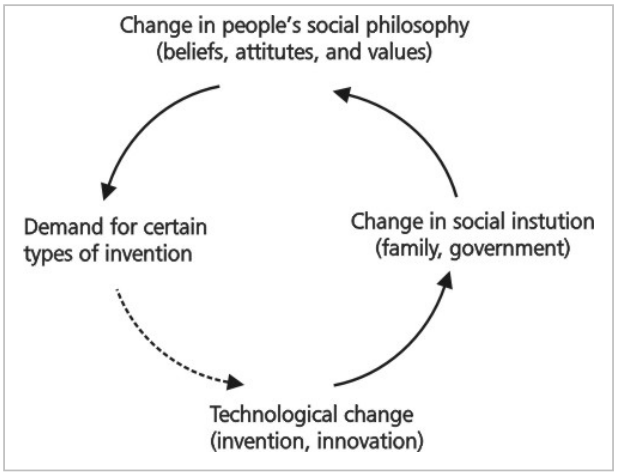

Figure 1. Ogburn's Theory of Social Change

Although Oghburn's theory analyses the social change in terms of technology, "[d]esign, science, and technology have to see themselves and each other as objects of creative reflection and intervention" (Meurer 52) and therefore the theory is strongly related with the change in the broad context of design.

Keeping Ogburn's theory of social change in mind, the second chapter provides the definition and exploration of the futures studies. As mentioned earlier, the analysis of the future is the topic for futures studies and future scenarios for the potential changes in technology and society constitutes the aim of futures studies.

The third chapter integrates Ogburn's theory into the context of design. The change in technology and society are considered together to draw their effects on the change in people's perception and needs, which leads to changes in the understandings of design and constitutes the main body of the forth chapter. Different or diverse approaches to the future of design are also presented within the fourth chapter.

The final chapter before the conclusion presents the relation between changes in the field of design and futures studies as an approach with the aim of exploring the ways for drawing the future orientation for design. Scenario building as a common method in design and futures studies is analyzed and approaches presented in the previous chapter are integrated to each other for drawing potential future scenarios for design.

The contents and the organization of the chapters are shown in Figure 2, where each step creates the base for the next chapter and shown in a cyclic nature as in turn, the future scenarios presented in the thesis may became the base for the analysis of the changes in different areas including technology and society in the future.

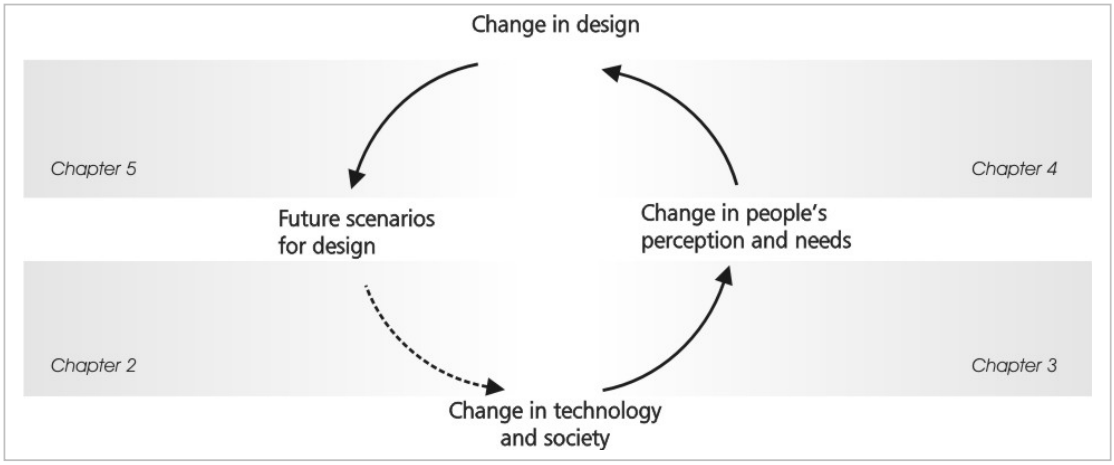

Figure 2. Contents and organization of the chapters

2. FUTURES STUDIES AS AN APPROACH TO DESIGN

Drawing future orientation of any issue seems to have an essence of futures thinking and may became a topic of futures studies in relation to its interdisciplinary nature. Design as an activity aiming at imagining and actualizing yet-to-be formed concepts can find some basic grounds with futures studies in nature. Beyond these shared grounds, futures studies may also be used for understanding the future of design. For this purpose it is necessary to look at futures studies in depth and analyze its history, its related organizations as well as its aims and methods. Understanding futures studies in depth may also facilitate drawing the relations between futures studies and design.

2.1. Historical Background

Thinking about the future and creating images of the future is not a new issue; it can be considered as part of human nature. “When man discovered that there could be yesterday and tomorrow, he had discovered the two Kantian categories of temporal and spatial. These became the tools with which he shaped his image of the future, both in another time and in another space” (Polak 3). Masini claims that, quoting Polak, the images of the future created by civilizations are immortal. All works of art in Greece and cosmic religious images of the future of ancient Persia are examples of this kind (A Debate 326). The origins of future thinking “can be traced over the centuries from Plato, Heraclitus, Augustine, Thomas More, Francis Bacon and many others” (Masini, A Debate 325). Hence, the roots of today’s futures studies are

created by many thinkers and philosophers long time ago and it is not a recent issue when we look at futures studies from a perspective of human being's inevitability of creating images of the future.

Although future thinking can be seen as part of human life, the history of futures studies as an area of study dates back to periods between World War I and II due to war-oriented planning programs. Post-war reconstruction programs were based on systematic studies of the future and required development of specific techniques for forecasting future trends and alternative futures (Lo Presti 311). According to Bell, national planning during World War I and the Great Depression in United States of America; previously mentioned William F. Ogburn's analysis of social trends and their relation with technological change in 1930s; war-oriented social engineering in the initial days of Communist Russia, Fascist Italy and Nazi Germany are examples of the early futures studies (Sociology of the Future 295). "During World War II, both on the military and home fronts, the requirements of massive planned change toward the greater organization of economic life forced leaders and their functionaries to make plans for the future, both for the short term and long term run" (Bell, Foundations 18).

After World War II, national planning became an important issue almost everywhere in the world. Considering the new political, economic and social structures, for both Western capitalist countries and Eastern communist countries setting goals and making projections into the future, altering policies and reassessing goals became part of the national planning. African, Asian, Caribbean, and Pacific colonies were also affected from global reorganization as futures thinking opened to question

existing social and political structures. All these developments, in turn, encouraged the rise of futures studies in a global manner (Bell, Foundations 18-22).

In relation to the developments in futures studies field in different parts of the world, we may refer to Lo Presti to define three main areas of interpretation of futures studies for today. The European area has a philosophical approach aiming at clarifying the links between ideology and social change. It takes into consideration the logical and methodological aspects of forecasting. The North American and Australian area has an engineering approach to the future and it is less related with the strategic and technological issues. In the developing country area, sustainable development and improvement of living conditions compromise the concerns for futures studies (312).

2.2. Futures Studies Organizations

As regarded in its historical background, futures studies is a growing body of knowledge today with its specific methods and areas of application. Moreover, futures studies organizations spread all over the world with the aim of raising the futures thinking in a global sense. These organizations are part of the history of futures studies and play an important role in the maturity of futures studies with their researches, international events and publications. Therefore futures studies organizations deserve attention as much as the history of futures studies as a body of knowledge.

Futures studies organizations are established following the historical developments of futures studies. Bell calls RAND Corporation as the first organizations on futures

studies. RAND stands for Research ANd Development, which was founded in late 1945 for keeping researchers together after the war period and working on future military technology. Although RAND was established primarily for the data based researches on military issues and future plans, by 1970, nonmilitary projects were also added to its agenda ranging from urban problems to population growth and medical researches (Foundations 27-47).

The Club of Rome is yet another organization founded in 1968. Bell states its purpose, quoting Moll, as "to alert world citizenship to what they termed the 'global problematique', a cluster of interrelated world problems including hunger, environmental degradation, violence, over-population, and increasing alienation of the working classes. It included a sense of fear and urgency about such problems and the need to deal with them holistically over the long term " (Foundations 45). Their well-known publication *The Limits to Growth* (1972) had a great influence in futures studies, selling over 9 million copies in twenty-nine languages (Cole 814) and "the emphasis [of The Club of Rome] on a holistic, global and multidisciplinary approach has became characteristics of futures studies" (Bell, Foundations 46).

Currently, there are three main organizations in the area: the World Futures Studies Federation (WFSF), the World Future Society, and Futuribles International. The WFSF is "an organization of some 500 individuals and 60 institutions around the world whose mission is to promote futures education and research. The WFSF is a global network of practicing futurists-researchers, teachers, scholars, policy analysts, activists and others from over 80 countries-established in 1967" (*WFSF web site*). Members of the society are from various backgrounds and "work on future-oriented

projects that study social, political, technical and cultural systems" (Lo Presti 311). "United Nations Educational, Scientific, and Cultural Organization (UNESCO) has been a major supporter of many of the activities of the WFSF" (Dator 299). The World Future Society defines itself as "an association of people interested in how social and technological developments are shaping the future. The Society was founded in 1966 and is chartered as a non-profit educational and scientific organization in Washington, D.C., U.S.A." (*The World Future Society web site*). Futuribles International, like the previous two organizations, is established in mid 1960's in France and it is probably the most important organization on futures studies in Europe. As they state in their web page, "Futuribles is an independent, private organization. Its overall aim is to contribute to a better understanding of the contemporary world and, using an approach that is strongly interdisciplinary and forward-looking, to explore the possible futures (in French *futurs possibles*), the issues involved, and the policies and strategies that might be adopted…The studies concern above all the future of Western Europe, in particular questions such as ageing populations, employment and social policies" (*Futuribles web site*).

All of the aforementioned societies in relation with many other private and educational institutions are actively organizing meetings and conferences all over the world like World Futures Studies Federation World Conferences and annual conferences and general assemblies of World Future Society. Besides, their future oriented publications from books, magazines, and reports to journals like *Futures, Futuribles, The Futurist,* and *Futures Research Quarterly* are among the most important resources where theoretical discussions and researches on futures studies and on many other fields with an emphasis on future approach are presented.

2.3. Aims of Futures Studies

The history of futures studies along with futures studies organizations provide a general understanding of the aims of futures studies as effectively understanding the conditions of the time where futures studies appear to be a body of knowledge and taking necessary actions for the better planning of the future was the essence behind the growth of futures studies. However, for understanding the aims of futures studies in a broader sense today, the history of futures studies itself does not appear to be sufficient issue; beyond that one may need to understand the concerns that lead to changes in society in a larger perspective.

Although the history of future thinking is almost as old as the steps of the intellectual development of human being, areas of futures studies as a field of study is linked with "the rapid pace of change in the Industrial Revolution that promoted awareness of the contradictions, unevenness and discontinuities of social change" (Miles 373). Industrial Revolution was an important point in the history in terms of formation of today's industrial society. For Bas, "[t]he three main processes that contribute, interlocked to the configuration of the post-industrial society (technological revolution, population growth and economic globalization) are causing increasing and, for the moment, unknown complexity levels as well as a general feeling of continuous change" (287).

Based on the intense analysis of the social, technological, and economic changes and their relations and effects between each other, futures studies aims at exploring "alternative futures-the possible, the probable, an the preferable" (Bell, The Purpose 42). As a field of study mainly carried out in sociology, social change is the most

important area of analysis for futures studies. However, as social change is bound to changes in many other fields, futures studies aims at defining these relations with a broad view angle. As these relations are complex in nature, theories analyzing these interrelations and scenarios for the alternative futures may seen as compromising the content of futures studies.

For the researchers in the field of futures studies, "future is considered from a structural point of view, hereby the future is plural because it is the sum of individual actions, instead of from a deterministic point of view, whereby the future is already written and is irrevocable" (Bas 291). Therefore, different images of the future, which people from diverse backgrounds have in their minds, compromise the essence of futures studies. Futures studies is not concerned with one particular future scenario, but analyze why different scenarios are there in people's mind, and how are they generated or what are their roots and how those different images lead to certain actions or inactions in the present and in the future (Dator 298). "Because present behavior partly produces the emergent future itself, futurists see images of the future as being among the causes of the future as it becomes the present" (Bell, The Purpose 43).

Futures studies with its theoretical background and previously defined aims, does not try to predict a single future, rather in the light of the above-mentioned tasks in general, tries to make people aware of the fact that there are many futures that are being shaped by our attitudes:

> "The idea that there is only one view of the future is not only incorrect in the face of empirical evidence offered by the past, and very strongly, our present time, but it is also a very powerful manipulatory tool that futurists must

> avoid. Futures studies in this understanding represents one expression of a moral responsibility that each and all human beings have about the future and the futures of all others" (Masini, Experience of a Sociologist 345).

2.4. Methods of Futures Studies

In order to understand different methods of futures studies used in the field, at a meeting of Yale Collegium on the Future in 1960, Lasswell defined five tasks for the study of future:

1. "The clarification of goals and values.
2. The description of trends.
3. The explanation of conditions.
4. The projection of possible and probable futures if current policies are continued.
5. The invention, evaluation, and selection of policy alternatives (in order to achieve preferred goals)" (qtd. in Bell, Foundations 49-50).

These tasks may be evaluated as a base for the formation of various methods of futures studies as the methods are developed in order to achieve several or all of the above-mentioned tasks. Although this study does not employs any of the forthcoming methods, previously quoted five tasks of Lasswel briefly outline the structure constructed for achieving the future orientation for design.

The methods used in futures studies are numerous and analysis of all of the methods is far beyond the scope of the thesis. This is not only because of the high number of methods applicable in futures studies, but also sometimes they are specific for the

diverse purposes and many of them are borrowed from other disciplines. However, to draw a general outline of the methods, some of the widely referred ones like trend analysis and extrapolation, cross-impact analysis, structural analysis and set of factors, Delphi method, and finally futures scenarios are explained in relation to their purposes and applications in futures studies field.

2.4.1. Trend Analysis and Extrapolation

Trend analysis and extrapolation in futures studies may be seen as a method serving Lasswell's fourth task: 'the projection of possible and probable futures if current policies are continued'. This method helps us to predict the future condition of a variable based on its own past. In other words, "we assume that the direction and rate of change in the recent past will continue, perhaps at a constant or the same changing rate of change depending on what the recent past data reveals" (Bell, Foundations 250). However, trend analysis and extrapolation has certain limitations coming from its nature, which are as underlined by Del Pino "linearity from the present, lack of alternative perspectives, and the impossibility of dealing with complex issues-handling just one variable at a time" (489).

2.4.2. Cross-Impact Analysis

Unlike the trend analysis method, the cross-impact analysis method works with several variables and their interrelations at the same time. As the change of a particular variable or the occurrence of a particular event may bound to the change in other variables and occurrence of other events, cross-impact analysis method is designed to deal with this fact by constructing a matrix presenting the interdependencies of different variables and events (Bell, Foundations 265). Del Pino

evaluates this method as the initial method or as an introduction for the method structural analysis (489).

2.4.3. Structural Analysis and Set of Actors

Structural analysis may be evaluated as an advanced version of cross-impact analysis. They have common aspects in terms of foundations however there are two aspects in which structural analysis is substantially superior over cross-impact analysis. One is being specifically designed to deal with many variables and the other is the inclusion of the study of indirect relations beyond the direct relations between variables. Being very costly in terms of time, money, and effort, and the exclusion of wishes, fears, strategies… of the agents involved constitute the limitations of the method. Set of Actors, on the other hand, specifically designed to focus on the limitations of the former method and therefore it can be called as a complementary step for the structural analysis. It analyses the different influence and dependence of each actor, and therefore evaluates its capacity to realize its objectives (Del Pino 490).

2.4.4. Delphi Method

The Delphi Method is one of the well-known methods of futures studies. It was specifically developed for futures studies in 1953 by RAND researchers and aim to explore alternative future possibilities by research and communication process. It has certain similarities with survey analysis however, unlike treatment and control groups in a basic survey analysis, there is only one group of experts, whose opinions are measured by means of a questionnaire. Results are communicated as feedback to all respondents and their opinions, which may have been changed in the light of other

respondent's comments, are re-measured. Finally, the data obtained at the end of several sessions is statistically analyzed, interpreted, reported and presented (Bell, Foundations 261-3).

Besides being commonly used in the field and providing scientific results, there are two problematic conditions of Delphi method. The first one is the use of experts only (Del Pino 489), and the second is the data themselves, as they are "subjective beliefs and judgments of expert respondents, even though such beliefs and judgments may be based on the respondents' individual objective knowledge of their fields. The objective measurement of such subjective beliefs and judgments are commonplace in the social sciences" (Bell, Foundations 264).

2.4.5. Futures Scenarios

Futures Scenarios in futures studies are regarded as the final result of the aforesaid methods. It is a way of summarizing the results of futures research either based on quantitative methods with precise projections or qualitative ones that lead to broad images of the future of a whole society. They may be based on the structural and statistical analysis or achieved by the personal observations, beliefs, values, and understanding of historical changes, at the end futures scenarios represents the images of the future (Bell, Foundations 316). As Bell says,

> "a scenario, a story about the future […] includes a description of available possible choices of human action and their anticipated outcomes, and it may include implicit or explicit recommendations regarding what choices and actions ought to be made now in the present to create the most desirable world in the future" (Foundations 316).

In essence and in scale, scenarios of futures studies are policy-oriented. They try to analyze all possible factors that affect the formation of the future. Moreover, contents of futures scenarios are built upon necessary alterations on political, economical, and sociological systems and try to orient related policies.

In conclusion, futures scenarios are an integral part of the whole body of futures studies. As they are about the future, a time period that has not come yet, there is always a probability of them not happening in the way statistical results indicate or in the way we prefer. However, the future, as being not experienced yet, holds the potentiality of providing new opportunities. “There are past facts, present opinions, and future possibilities. But there are no past possibilities and there are no future facts” (Bell, Sociology of the Future 304).

2.5. Relations between Futures Studies and Design

The main purpose of this study is, as mentioned in the introductory chapter, drawing the relations between futures studies and design in order to provide a systematic approach to the future of design. Therefore after having an understanding of futures studies in depth, it is necessary to depict the points where design and futures studies may have common grounds.

An important point in drawing the relation between futures studies and design is the interdisciplinary nature of futures studies. For Bas, “the increasing complexity levels in the configuration of social interactions, social structure and organizations, communication, values and regulations, etc. demand new approaches for both old and new problems” (288) and to provide such approaches, interdisciplinary studies

are becoming increasingly necessary. Masini and Wilenius call futures studies as interdisciplinary in this sense: "it needs the support of many disciplines. It is equally important that whoever exercises futures studies does so on a solid scientific background, be it social sciences or hard sciences" (284). Similarly, as mentioned earlier in chapter one, Bell argues that futures studies would be enhanced in theory and in practice with the contribution of other disciplines (Foundations xxii). Looking at futures studies from this perspective allows us to consider design along with many other disciplines as an area to be explored with futures perspectives in order to develop itself for future contexts and deal successfully with increasing complexity levels.

Beyond the interdisciplinary nature of futures studies, its theoretical understanding of images of the future is related with design at certain extents. Different images of the future are closely related with the visions of society and one's approaches to the social change. Many authors from the field of futures studies (Bell, Dator, Jones, Novaky, Yamaguchi) argue that social change is strongly bound with the technology and technological changes affect the way people understand, believe, and act through time and space. Moreover, Miles underlines the social shaping of technology (375). As technology and society are strongly bound to each other and are topics for futures studies, design as a link between these areas appears to be strongly related with futures studies in terms of contributing to the formation of images of the future.

Besides the societal and technological perspectives as a base for analysis, aims of both areas also have certain similarities. "In terms of their intended outcomes, design and foresight have identical aims. Both create in the present an understanding of

future needs and situations that will allow directions to be set and planned for" (DFFN 49).

In the light of these relations, following chapter draws the relation between design, technology and social and cultural contexts. As this relation is outlined in depth, not only the relation between design and futures studies will be more apparent, but also changing understandings of design can be understood in depth and futures scenarios for design may be constructed with their roots in technological and social changes.

3. UNDERSTANDING CHANGES IN DESIGN

"The evidence of history is that design, as a basic human activity, is constantly required to adapt and redefine itself to meet the needs of its time" (Heskett, Past, Present, and Future 26). There are various approaches to design and there are different understandings of design. These approaches and understandings are not different from each other only in terms of personal attitudes or interpretations of design but also in terms of changes in the context of design. For this reason, changing understandings of design may be analyzed in terms of changes in the fields that are compromising the context of design and their interrelations.

Changing understandings of design sounds more like an expansion of the definition of design. The expansion is actually a natural outcome of possibilities coming with interconnections between different fields. Today, to discuss about design is possible with references from every aspect of the society. Especially in product design, due to the central role of products in our every day life, it is almost impossible to separate design from the dynamics of the society. However, the societal aspect is only one direction for the expansion of the definition of design. Technology is yet another major area where it is possible to find many channels letting the flow in both directions between design and technology.

Following the current definitions of design and analyzing changes in the philosophy of design with an emphasis on products and human environments, the present chapter

looks at design and its expanding relation with other areas with an emphasis on technology within the social and cultural context. This approach will provide a base for approaching the future in a systematic way seeing the future being developed and constructed from today.

3.1. Definition of Design for Today

Drukker argues that the accelerating process of western modernization since the second half of 18th century can be regarded as the interaction between essential changes in the field of science and technology, the social and demographic structure, and the economic structure of the society (19). In relation to these changes and all of the social and technological challenges we face today as an outcome of the shift from industrial society to a knowledge society necessitate a better understanding of how we see design today (Meurer, New Design Challenges 26).

Meurer defines the changes in design at two levels: increased complexity of design problems and changing structure of their contents. “These state of dissynchronicity and imbalance always has existed, with the difference now that the legs and gaps are becoming ever greater” (New Design Challenges 26). What is covered under the content of design plays decisive importance as serving basic human needs in their daily lives, work environments, in their leisure activities and communication facilities no more fulfill the purpose of design; or with a different point of view, what is covered under these “basic human needs” is a changing and evolving concept. The change can also be called as expansion from “designing a finished object in a distinctive form, to designing systems giving users access, enabling them to navigate complex information in a clear and simple manner, providing effective choice over

the configuration of a product or service" (Heskett, Waiting for a new Design 97). These are some of the key points where the difference between today's understandings of design and its past has become visible. In order to define design for future contexts, changes in design philosophy need to be analysed in depth. This analysis will not only bring the discussion to a more theoretical base but also help us to discuss design in a broader context.

3.1.1. Changes in Philosophy of Design

"The ultimate purpose or function of design in society" argues Buchanan, "is to conceive products which express and, necessarily, reconcile human values concerning what is good, useful, just, and pleasurable" (Branzi's Dilemma 11).

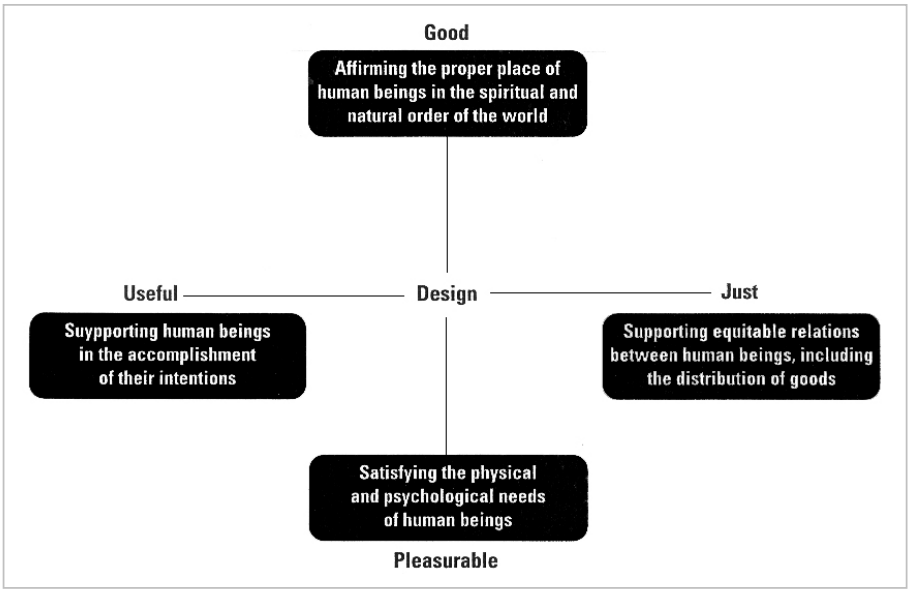

Figure 3. "Relationships Among the Ends or Purposes of Design" (qtd. in Buchanan, Branzi's Dilemma 12)

As shown in Figure 3, the purposes of design from satisfying human needs to providing them equitable relations, changes in philosophy of design may be defined

as “an active search for new principles or for new embodiments and expressions of trusted and traditional principles” (Buchanan, Branzi’s Dilemma 12). Therefore understanding the changes in philosophy of design is related with exploring the past and current circumstances.

Heskett suggests looking at history as a source to understand the change and analyze the future, which involves changing the understanding of design as the particular set of skills or organization appropriate to our modern age and defining it more in terms of a generic human capacity to shape and make the objects, communications and systems that serve functional needs and give representative meaning to life. In other words, seeking the connecting links and themes that underlie the proliferation and confusion in design understandings (Design for Industry 19).

With the changes in technology and society, it is a natural outcome that design today experiences a shift from images and physical objects, as such, to the processes of interactions and experiences. Design finds its place at the very early stages of product development, where fundamental decisions are taken long before the forms, shapes and ergonomic constrains are studied. In other words, design has become more human and more culture oriented, where values and thoughts become the main roots for design. Buchanan calls this shift as “strategic planning [-]…an effort to place communication and construction in the context of action, with designers serving as collaborative agents in determining public, corporate, and private plans for action” (Branzi’s Dilemma 12-13). He illustrates strategic planning as a way of design thinking in a matrix as shown in Figure 4.

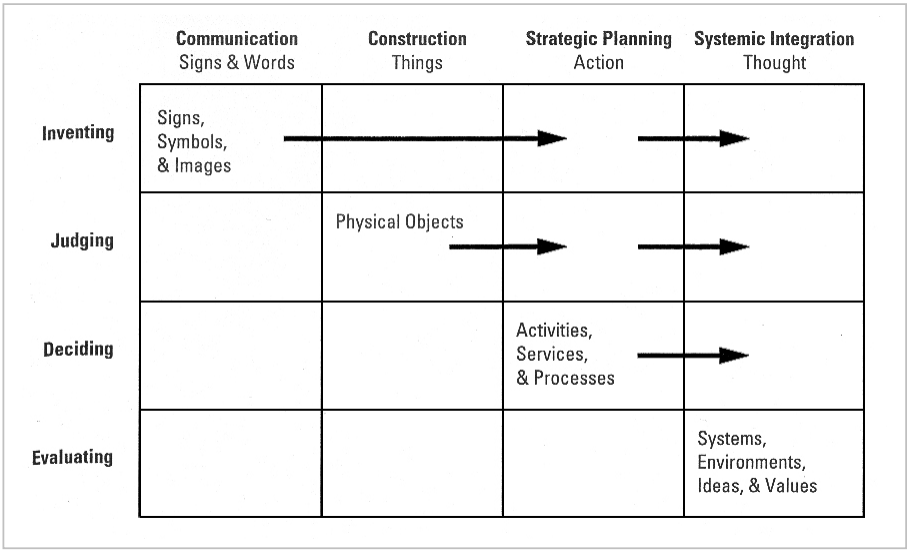

Figure 4. "Human Abilities and Design Disciplines" (qtd. in Buchanan, Branzi's Dilemma 12)

What the matrix provides in terms of human abilities and design disciplines is the point that natural ability of invention or the creative side of design is not the only issue of design profession today when the further stages of design activity are considered. "The intellectual and moral character of designers [which compromise the essence of philosophy of design today] is formed when natural ability is extended and supported by means of the arts and sciences, by the disciplines of thought, action, and production" (Buchanan, Branzi's Dilemma 13).

What may be concluded in terms of changes in philosophy of design is that today, design is perceived from a different view angle or better to say from an expanding perspective covering all the issues necessary to understand products, human environments and their possible interrelations through design.

3.1.2. Products and Human Environment

As the philosophy of design encounters a shift from designing physical products towards the action and thought based activity, this shift is also experienced in the products and human environments where the experience of products and the nature of human environment go beyond the physical towards the experiential endeavours. Writing on product maintenance and user requirements, Orel says, quoting John Dewey "[a]n organism does not live *in* an environment, it lives by means of an environment" (93). Taking Dewey's statement as a metaphor, he remarks that " [this] can help us to illustrate how the mode of existence of industrial products began to be conceived in the consumer society of today" (93).

Considering today's society and the role and design of products, the relation between products and human environment is becoming more organic everyday. Products became a way of experiencing life with their new functions, not merely function as usefulness and appropriateness to the purpose but also as being a process of interaction. Buchanan brings the term "ecology of culture" to define this new phase of relation between products and human environments. For him "the pluralism of the ecology of culture [may be better understood as] seeking the integration of multiple causes that is revealed in our interaction with each other and with our environment" (Buchanan, The Ecology of Culture 83).

As the level of interaction between the human and his life-world is increasing, design gains the function of enabling experiences. McLellan uses the term "experience design" for the design of experiences and she defines its goal as "to orchestrate experiences that are not only functional and purposeful, but also engaging,

memorable, and enjoyable" (59-60). For her, experience design is an ancient practice where rituals, ceremonies, drama, and even architecture of buildings like medieval cathedrals are designed for certain experiences. However, she also argues that the design of experience has became much more pervasive during twentieth century (60). Today, one may easily conclude that the aforesaid changes in design philosophy can be further developed if experience design became an integral part of the products and human environments to build such experiences.

"The history of design in the twentieth century is not merely the history of *products* or of *personal styles of expression* or even of *broad cultural ideas*. It is also the history of the *character and disciplines of design thinking as they are formed through encounters of new problems*" (Buchanan, Branzi's Dilemma 13). Such new problems have to address the new dimension of experiences between products and human environments and have to be analyzed in the light of design's expanding relation with other fields.

3.2. Design and its Expanding Relation with other Fields

For successfully defining design for today, one needs to understand the fields, with which design is in relation in our time. However, it is a difficult and perhaps almost impossible effort to analyze every single field that design is in relation to and design is affected by. Buchanan defines three perspectives, which have strong influence on the new design thinking of our time: Power to control nature and influence social life, material conditions and aesthetic appeal and finally spiritual life. These perspectives lead to a shift from pre-defined borders of design discipline toward different types of philosophic or cultural content (Rhetoric 47).

For the scope of the thesis and for drawing the future orientation of design in general terms, two relatively broad areas are chosen to understand changes in design, namely technology and social and cultural contexts. All of the single fields either from social sciences or with an engineering background, with an artistic approach or entirely based on concrete statistical findings, can find their roots within these areas as these areas are strongly bound to each other and design may be discussed as a way of transition between technology and society (Irmak and Wilsing). For this reason, developing technologies and effects of technology on society is analyzed first. Following this, the social and cultural context is examined to draw the broad picture of its relation with design.

3.2.1. Technology

3.2.1.1. Developing Technologies

Recent developments in technologies are regarded as compromising the "third industrial revolution (the steam engine being the first and electrification the second)" by Thurow. This third revolution he says "is based upon technical breakthroughs in computers, telecommunications, microelectronics, robots, new materials, and biotechnology" (82). He also states that interactions of these areas "are changing not just business but warfare, culture, government, and religion" (82).

Among the areas where technology is developing, information and communication compromise the most related issues for discussing design and therefore information and communication technologies (ICT) form the essence of this section. To understand the relation of ICT and design in depth and to understand why ICT is

chosen, one may refer to Freeman's explanation of the parallel effects of the spread of ICT through the economy where the term 'design' is called several times. These are:

> "the capability which it confers for more rapid changes in product and process design; the much closer integration of design, production and procurement functions within the firm; the reduced significance of economies of scale based on dedicated capital-intensive mass production techniques; … the growth of new 'producer services' to supply manufacturing firms with the new software, design, technical information, and consultancy which they increasingly require; and the extremely rapid growth of many small new innovative enterprises to supply these services and new types of hardware and components" (91).

Freeman sees the effects of ICT so universal that "they may be legitimately described as a change of 'techno-economic paradigm' providing scope everywhere for renewal of productivity increases through a combination of organizational, social and technical innovations and for a broad range of new and improved products and services" (92).

Although Freeman provides an economics perspective to technology and products, while thinking of design, products and services are not the only issues to be discussed in relation to developing technologies. Technology is part of a complex relation between people and their lives and therefore it is a necessity to look at technology's effect on this relation. For instance, Anderson discusses developing technologies in relation to human identity in his books *The Future of the Self* and *Evolution Isn't What It Used To Be*. For him, on the basis of what is happening in the fields related with developing technologies, 'selfhood' will change beyond its current understanding and by 'selfhood' he refers to

> "the various ideas and experiences that constitute our sense of personal identity. These include boundedness of body and mind (what is inside, what is outside, what exactly boundaries *are*), distinctions from others (either the individual's distinctness from other individuals or human distinctness from the nonhuman), continuity (you are essentially the same person today that you were yesterday), and singleness (you are one person, not many)" (Human Identity 536).

Anderson states that accelerating technological changes are now affecting the sense of personal identity under three major themes: augmentation, symbiosis, and transcendence. Augmentation refers to creating human abilities that were not biologically inherent, through developing technologies. Symbiosis on the other hand stands for enhanced relation between human-machine, organism-artifact, and nature-technology. Finally, transcendence is related with the expansion of personal identity and becoming parts of a large entity that is to say creating the global brain (Human Identity).

Dawkins and Pantzar present similar approaches to the relation between technology and human beings. Dawkins states in his book *The Extended Phenotype* that the improvements in human nature are created through technology in a similar way to the augmentations of animals that are created instinctively. Pantzar on the other hand focuses on the creation of new human types through "different types of consumers [and consumptions] upon which the information society and new everyday technology is being constructed" (4).

The way identities are constructed with developing technologies is very much related with the conception of time and space. These areas are also to be discussed in the light of developing technologies. Today, the explosion in mobile telecommunications and computing technologies leads to social construction of different dimensions of

time and space (Green 281). "Time-space compression [,]" as called by Massey, "refers to movement and communication across space, to the geographical stretching-out of social relations, and to our experience of all this" (*A Global Sense of Place* 147). Communications networks are making distances shorter and physical borders are no longer limiting our space; relations, communications, interactions, and all aspects emerging with new technologies give shape to space in a broader sense. "As we become more mobile physically, and more connected 'virtually', space too seems to enlarge" (*The Socio-cultural Horizon* paragraph 3) not only through its physical boundaries but also in terms of its meaning. "[I]t seems that [we] can sense the simultaneous presence of everywhere in place where [we] are standing. […] What is happening is that the social relations which constitute a locality increasingly stretch beyond its borders; less and less of these relations are contained within the place itself" (Massey *A Place Called Home?* 162).

McLellan discusses the notion of virtual environments, which are no doubt an extension of what we have called 'place' so far, or with her terms what Oldenburg's 'third places' refer to now, in the light of today's and traditional sense of place.

> "[The] notion of a 'third place,' a physical (or now virtual) place set apart from home and work, where a person can interact with others he has come to know as members of the same community. The trend toward suburbanization over the past several decades has disrupted people's access to the traditional local spots that served as a 'third place' in traditional communities. But now many enterprises are trying to fill this gap, including online communities, theme vacations and workshops [by designing informal public spaces-including gathering spaces in cyberspace] " (66).

Like the experience of space, time gains new definitions through the use of new and mobile ICT. What Castells refers to as "timeless time" (433) is the reconfiguration of

time in the light of simultaneity of presence and material and virtual existences. Virtual reality can be a good example for the discussion of new conception of time as with virtual reality technology the 'future' or not-yet-experienced experiences can be practiced. One may reconstruct the experience needed to generate alternatives with the help of information technology. It also allows simulation of the future and so modifies the time frames, which no longer refer to repetitions of the past with little differences (Lee and Whitley 238).

What may be concluded from the previously quoted definitions of time and space is that neither time, nor the conception of space is the same as of the past. The same is valid for the human identity in our time. Their definitions today and their interrelated conceptions come from their containing or being reconstructed on social context through developing information and communication technologies. Design in this sense needs to get into relation with such expansion in meanings and needs to understand the influences of technology in a broad perspective.

3.2.1.2. Humanization of Technology

Technology is discussed today in several ways, as in the aforesaid terms of time, space, and identity. What we may conclude from this is that technology is being discussed in more humane terms and more in relation to human experiences. Through the expansion in use of new technologies in every aspect of experiences, technology has become more integrated into our lives. It increases the interactivity between and among many people as well as they create new interactions between human and artifacts. Hence, one may state "new communication technologies which do not address immediate human needs are not quite useful to human society no

matter how effective they may be in increasing communication among people" (Obijiofor 456).

In relation to human needs and developing technologies, in his book *Things That Make Us Smart*, Norman suggests a human-centered technology or better to say humanization of technology. The connections between human-technology and design-technology become more intense every day allowing new fields for design to expand and affect our life in a broader sense. "[H]uman intelligence is highly flexible and adaptive, superb at inventing procedures and objects that overcome its own limits…tools of thought-cognitive artifacts-that complement abilities and strengthen mental powers" (Norman 43) can only be achieved through humanization of the technology.

Design in humanization of the technology plays a key role as design sees human as the core of its orientation and successfully serving needs of human beings as the primary goal. "Human-centered design" says Buchanan, "is fundamentally an affirmation of human dignity. It is an ongoing search for what can be done to support and strengthen the dignity of human beings as they act out their lives in varied social, economic, political, and cultural circumstances" (Human Dignity 37).

In conclusion, the crucial humanism of design and technology is related with the fact that human beings decide what the subject matter, process, and purpose of design and technology shall be. These are not determined by nature, but by the decisions of human beings (Buchanan, Rhetoric 55).

3.2.1.3. Technology and its Effects on Society

Although technology and its effect on the reconstruction of the identity and selfhood are discussed under developing technologies, developments in technologies have also affects on society.

> "Technology is not infinitely malleable. It is material, and like other material, it brings its own properties into social relations, which includes not always doing what innovators would hope it would do…technological development is a creative social process, undertaken by agents who are constrained by the social and materials worlds in which they exist" (Miles 382).

As technological development is a social process, it is also a major instrument of social change. The relation in-between affects all of the demographics, cultural transformations, and political-economic instabilities. How past technologies and the environments created by, helped shaping behavior and beliefs, new and emerging technologies challenge prior institutions and beliefs, and thus contribute social change of today and the future (Dator 303). Lee and Whitley argue that many discussions on time and information technology at the societal level begin and end with globalization. As information technology and telecommunications develop, what was referred by the global becomes a reachable horizon both in terms of time and space, on which human beings can take actions and by which they are acted upon (237).

Society in this respect constitutes a major area to understand and to analyze developing technologies. However, technology by its own is the not only force that shapes or changes the dynamics of society. Thinking of society as being within the cultural context needs a wider approach beyond the effects of developing technologies. At one extent, technology is also shaped by the society, which

underlines the idea of design as a two-fold relation between technology and society. For this reason, design may be discussed also within social and cultural context, where technology may be set aside as an influential factor.

3.2.2. Social and Cultural Context

The strong relation between design and the society requires a deep analysis for understanding their relation to design. Beside the contribution of design to society in terms of products and the way it influence the formation of its dynamics, the influence of society on design is another side of this relation:

> "Design rests on the ability of human beings to reason and act with prudence in solving problems that are obstacles to the functioning, development, and well-being of individuals and society […] There is a deep reflexive relation between human character and the character of the man-made: character influences the formation of products and products influence the formation of character in individuals, institutions, and society" (Buchanan, Rhetoric 29-30).

3.2.2.1. Mass-Production and Mass-Consumption

To begin with the analysis of design in the social and cultural context, one may need to consider how the society is defined today. Therefore, mass-production and mass-consumption, which are the ways industrial society is identified, needs to be analyzed in depth.

To understand what is meant by mass production and mass consumption, the distinction of need and want play decisive importance. When consumption is discussed in historical context, need consumption constitutes the characteristic of traditional societies where the purchase of new items means the purchase of 'fresh' items. Consumption in this context stands for replacement of the one that is worn

out, lost, broken or destroyed. What characterizes modern societies is the shift from need consumption towards want or desire consumption as the members of such societies expect continuous change that is not limited to the question of replacement (Campbell 238-9).

Today, consumption is very much related with the mass-production of new things, regardless of their slightly different forms or functions as compared to previous ones. In today's society, objects are wanted rather than needed. Mass-consumption in this sense does not wait for a new need to arise; it is bound to people's desires. From another point of view, need consumption is continuous in today's society but "yesterday's luxuries become today's necessities, or wants become translated into needs" (Campbell 239).

As wants are translated into needs, all the reasons behind buying items are changing accordingly; "consumerism […] ultimately sustains itself by becoming an intimate part of the action frameworks of individuals, and how they present themselves to others" (Storper 392). In other words, products became an important part of our lives. Although they are replaced by new ones constantly, they gain a central role in our everyday life, effecting all the actions and communications within society.

3.2.2.2. Communications and Interactions

Although with mass-production and mass-consumptions designers became busy with designing similar or almost the same items for further consuming, the social effect of this has become an important issue. As Meurer puts it,

> "If we construe design as being oriented toward action, and regard action as something more than passive use, but as active intervention and creative change, then design will no longer just focus on the object as a form. Rather, designers primarily will be concerned with how to develop and model processes: process of interaction and change, in which objects nevertheless play an uncontested central role as a medium for action. Seen in this light, design relates to the entire physical and intellectual scope for interaction between people; between people, products, and the lifeworld; and between products, in other words, between machines" (The Transformation of Design, 44-5).

Design in today's social and cultural circumstances requires a new social responsibility. Even though mass-production and mass-consumption keep up their pace, the material side of items and the use of such material objects for social communication brings some weaknesses in the way that today, "individuals seek in material possessions fulfillment that is to be found in wholly different realms – especially human relationships where they aren't getting what they need and don't know how to get it" (Schmookler 18). Regarding this idea, design in the social and cultural context gains a different role than the past. In other words, it is the responsibility of design to serve the society not only with products to consume in a traditional ways, but also design of products needs to allow its user to communicate and interact within the society not just by their materiality but by addressing social and human values.

3.2.2.3. Lifestyles and Values

In an age where products gain a central role in our lives and became an important part of the social dynamics, Margolin and Margolin point to the lack of theorizing about a social model of design as compared to market model of mass-production (24). Especially human values seem to be ignored in the market model, where the value of a design is scaled with sale statistics.

Alternative perspectives and diversity of the society are essentials of ordering, disordering, and reordering of ideas and values, which constitute the central endeavor of human culture. Moreover, the diversity of various personal visions is required to avoid falling into narrow thinking (Buchanan, Branzi's Dilemma 3). However, the material context of consumption gives everyone an impression of sameness even as they are confronted with an excess of product choices (Storper 401). Therefore in the social and cultural context, design needs to aim at serving different lifestyles and human values without assuming materiality as the center of today's society.

Defending human values and diverse cultures in the age of modernization is becoming a central concern for design. "[D]ifferent cultures are increasingly being forced to act and cooperate with one another, both on a global level as well as within societies" (Karmasin 13). Similarly, once marginalized and underserved populations are regarded as important parts of the dynamic nature of today's society to be served by design. For this reason, one may conclude that design and its relation with social and cultural context deserves a higher level of understanding and analysis for drawing the future orientation for design.

4. CURRENT APPROACHES TO DESIGN

"In many advanced societies, the worlds of work and play, education and environment, industry and the arts, and the public and private sectors are no longer strictly separated; at home and work, this is leading to the disappearance of the 'break'" (The Socio-cultural Horizon paragraph 5). In such a context, design of outdoor spaces, image of interior environments, and design of objects that give the meaning with possible interactions and experiences built around do not remain steady and are getting integrated to each other at a higher level.

The number of objects shaping the life-world increases rapidly with the new means of production and increasing rate of consumption. Life becomes more problematic every day and the increased number of products designed in a traditional sense only multiplies our fears and raise our worries towards their complex use, materiality, and effects on our culture (Myerson 61).

Current approaches to design, however, are entirely based on the changes in life-world and they present the disappearance of formerly defined borders of design: domination of physical constrains, functionality in terms of mechanical identity, appropriateness for every task and every needs etc. What they bring is actually a view of humanly concerns at the very core of the design philosophy and serving him with immaterial structures along with material objects, enabling further interactions between humans through objects, taking every single identity as a part of the whole

and actually shaping the society, touching their senses by providing enjoyment and pleasure through turning passive use and function into an experience and action. What new products further provide is re-shaping or at a broader sense creating the needs and future consumers by adding all of the aforementioned concerns to current approaches to design.

4.1. Design of Material Objects versus Design of Immaterial Structures

How developing technologies bring about new opportunities for designers to have better control over visualization and realization of their design ideas with new materials and processes, it is also the technology that moves the experiences from physical world to virtual environments. Human beings no longer see themselves as static in relation to time and space; time is experienced as accelerating and accordingly, one must keep up with events occurring in the world around him. Hence, human existence become more mobile physically, and more connected 'virtually', space in regards seems to enlarge, making humans 'virtual nomads' with few fixed points of reference (*The Socio-cultural Horizon*, paragraph 3).

Along with the life in the virtual realm, design of virtual worlds is being discussed today. “The expanding virtual world and the ever-increasing intensity of online activities is having a significant impact on our social and cultural environment, hence affecting the built environment and potentially altering lifestyles” (Lau and Maher, paragraph 5). With the effect of online activities, designers are faced with more complicated design problems that require a multidimensional view and cross-disciplinary approach. The built environment itself became a new design problem in the virtual realm.

However, this shift from material to virtual in terms of experiences does not simply mean that physical design shifts to virtual design. Rather this idea underlines the importance of activities that are not only carried with the physical existence of the product itself but also with the immaterial structures that came along with the products and clarify how design needs to be affected by them.

While looking at design from this perspective, we may rethink the definition of design or better to say what good design means given by the Braun design department:

- "Good design means innovation
- Good design means usefulness
- Good design means aesthetic design
- Good design explains a product and its function
- Good design means honesty
- Good design means durability
- Good design means consistency down to the last detail
- Good design means respect for the environment
- Good design means as little design as possible
- Good design is unobtrusive" (qtd. in Rams 41)

Physical attributes of a designed object may be well defined with the above-mentioned qualifications. Within these qualities, the last one perhaps most concerns the approaching changes in design: "*Good design is unobtrusive*: Products should be as natural and as reserved as possible, leaving room for the users' self expression" (Rams 41). However, in the light of the previously discussed changes in the philosophy of design, one may easily conclude that satisfying emotional needs of human beings or sustaining human values in the digital era are equally as important today as durability and respect to the environment. These points along with the others to be mentioned under the following titles should not be seen as the issues that

are forgotten or underestimated by Braun design department, but rather these qualifications are possible to achieve with the design of immaterial structures.

When we look at designers and their works today, it is possible to observe change. Designers still design post boxes or telephones, but they also design new ways of communication. There are still office furniture in the market that are designed in a traditional sense, but also new work processes and new concepts on how the office should look like in the digital age became a design problem. In this manner, Matius suggests

> “shifting our perception - away from hard facts, isolated object areas, fixed concrete objects (and thus immutable objective conditions) all the way to the changing relations, counter-effects, and energy fields between them. We would have to learn to develop processes and relations in such a way that they are open to other connections and allow an interplay with others" (88).

Today, the range of tasks on which design has focused involve product and service innovations along with economic and social innovations. In the future, the inclusion of what lurks between these categories will be significantly important. In other words, in the future, the main driving force of design will be the invention and development of 'products-process systems' (Meurer, New Design Challenges 27).

The change in products and their design shows us that designers will no longer design objects that exist only physically or better to say, design of immaterial processes will be equally important with design of material qualities. For illustrating this change in design, one may refer to a current example from the toy industry: Pokémon. Pokémon is a new game, however what is meant by ‘game’ is not what it was referred to just a couple of decades ago. Game, as it is used for Pokémon, is a

multi-dimensional concept related with almost any part of today's children life. The ways it uses to reach anyone is almost limitless. As the ways of communication develop, they become new sources for this game to get into our life and add new means to experience this game.

Focusing on play culture, Cook claims "the realm of children's leisure has grown into a highly contested, morally loaded social arena in recent decades."(81) He says, "children and childhood cannot be insulated and protected from the outside because inside and outside no longer exist in terms recognizable as merely spatial." (82)

Regarding the current understanding of economy, Liebl points out "a shift away from the production and consumption of goods in favor of the production and consumption of signs is a key aspect of post-modernization." (39) This is the point, where Pokémon stands as not only single products but also a large concept created with new signs and immaterial structures.

Pokémon was created by Satoji Tajiri, who is the son of a Nissan salesman and grew up in suburban Tokyo in the 1960s (Chua-Eoan et.all). Pokémon (which is both singular and plural) are pocket monsters, and the name comes from the first couple of initials of pocket and monster. They are animated hybrid characters, which reside in the world of Nintendo's Game Boy (a hand-held computer game). The objects of Pokémon are more than 50 different monsters, each of which are transforming into two other characters. All of these characters are for the player to 'catch' (or collect) them all. The player, known as a trainer, guides the Pokémon, who do fight with each other. Instead of dying in fight] they faint only to revive, and fight again (Cook 91).

We cannot call Pokémon simply a toy, a doll, a game, a competition, or entertainment. Any single word is not enough to cover all what lies beneath. It is designed to cover the whole in a broader sense. It is a reflection of developments in technology, changes in society, and formation of consumption culture. It is also what is referred as the design of immaterial structures. What is covered under *Pokémon web site* (Figure 5) simply explains what is meant by 'toy' today: games, products, events, TV, movies, promotions.

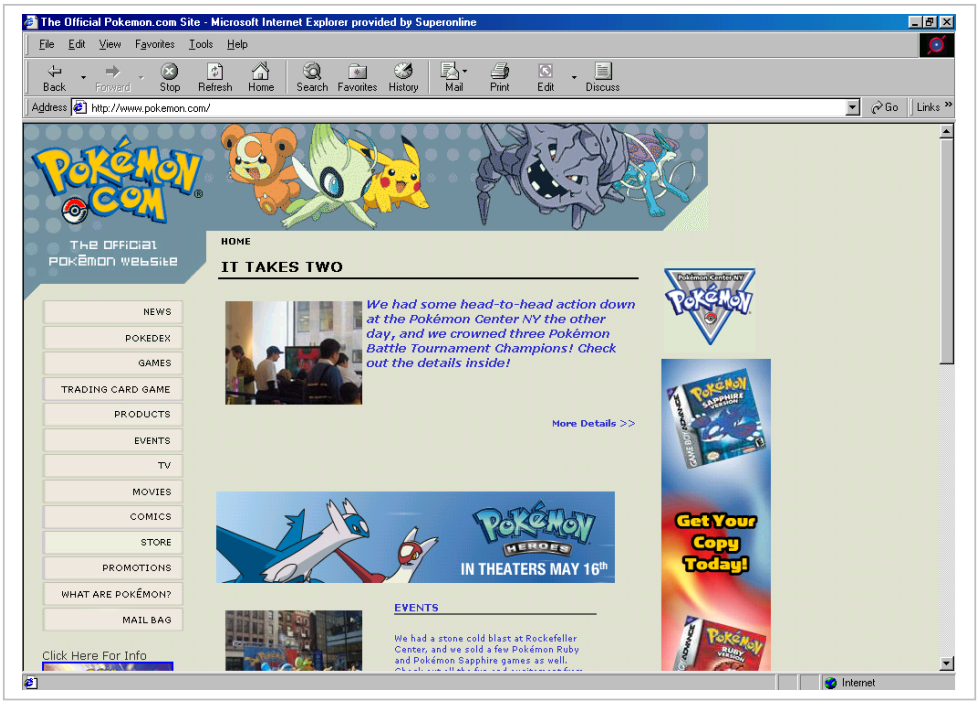

Figure 5. Pokémon official web site – http://www.pokemon.com

According to Cook, following its arrival in the United States in 1998 as a television show and videogame, Pokémon has become a large market supported by various items and toys with licensed images on backpacks, pencils, wristwatches, and cameras. Moreover, two feature-length films are produced less than a year apart in November 1999 and June 2000. The trading cards of Pokémon have acquired most of

the public attention and debate because they integrate the chase and strategy, and make some monetarily valuable its collectors or players who are mainly boys ranging in age from 3 or 4 years old until about 12 (91).

Today, products are created within the lifestyle scenarios. Whatever is thought or planned to be included in our life in the future, feeds the design process. That is why products become multi-dimensional, more concerned with the socio-cultural and technological changes, and accordingly create their own meanings: Pokémon is a single example for the evolution of toy industry and play culture.

The design of games or toys today, or almost any other product in the market from households to computer devices, cannot be simply evaluated under their physical constrains. They are not simply material objects or better to say material objects are all fused within immaterial structures. “The physical product i.e. that which until today has been considered the product, becomes the material component of a new, more comprehensive product-service” (Manzini 47).

4.2. Design as Process of Interaction

Design is widely seen as a process of interaction, which may be regarded as a continuation of the abovementioned concept of design of immaterial structures. The level of interaction between products and users is far beyond the physical and cognitive ones. Also not only the interaction between user and product but also interaction between users and between products is equally important. Products allow us to interact with others in many different ways and products themselves interact with other products with the help of developing technologies. As Meurer puts it,

> "If we construe design as being oriented toward action, and regard action as something more than passive use, but as active intervention and creative change, then design will no longer just focus on the object as a form. Rather, designers primarily will be concerned with how to develop and model processes: process of interaction and change, in which objects nevertheless play an uncontested central role as a medium for action. Seen in this light, design relates to the entire physical and intellectual scope for interaction between people; between people, products, and the lifeworld; and between products, in other words, between machines" (The Transformation of Design, 44-5).

To understand the process of interaction, one may refer to Margolin's "product milieu" (The Product Milieu 122, Getting to Know the User 228), which represents the range of objects, activities, services and environments that constitute together the concerns of design understanding today. For enriching one's understanding of product milieu, Margolin suggests exploring "in greater depth the interactive relation between how people develop their individual and collective activities, and the ways that new products influence and are influenced by this process" (Getting to Know the User 228).

Margolin's product milieu stresses the importance of experiences that are designed with–or in–products. Products of today provide their users not only physical conditions where the product fit certain functional qualities but also certain experiential possibilities. While thinking of design and the relation between product and user, there appears a shift from the idea of function to that of action. Although functionality is understood as a mechanical identity of a product and the action as a form of use, they may be evaluated together and product use may add a social dimension to the definition of function (Margolin, Getting to Know the User 228).

In order to understand how the interaction and experience became part of an object and how it may be integrated to the function of design, skim.com stands as an extreme example. “Skim.com, from Switzerland, is a new line of socially modifying clothing and accessories; each piece displays a six-digit number [like 012345] that is actually an e-mail address registered to the wearer at skim.com [like 012345@skim.com]” (Hutton paragraph 3) making it possible to contact or ‘skim’ someone who catches one’s interest.

Here what skim.com stands for, as a design example, is widely different than the design objects in a traditional sense. It involves certain aspects of physical design as accessories and clothing are involved within the concept but there is more than the clothing: a way of identifying oneself through a number, which is actually an e-mail address and provides others to get in contact with the person who carries the number through clothes. “Though many have focused on the idea that skim.com's clothing makes for a viable dating method, the founders seem to be earnest in their intentions to form community and promote art and music – not just through the clothes, but with a magazine, record label, and retail stores as well” (Schoenung paragraph 9).

Coppin evaluates skim.com as a new way of community building:

> “Skim.com began as a network of people who were ‘friends and friends of friends’ wanting to share ideas about art and design. The clothing line seems to work as a way of broadening and democratizing that network, taking it beyond Europe by merging two vehicles: the Internet, which is virtually limitless and highly accessible, and clothing, which reiterates the importance of having real, live people involved and takes the forum out of a chatroom format and into the real world” (paragraph 1).

Skim.com exemplifies how the interaction level of design may become a major concern for design. This idea is closely related with the emerging product-process systems in design as outlined in the previous chapter. Providing a process of interaction through design is actually a response to a very basic human need: communication.

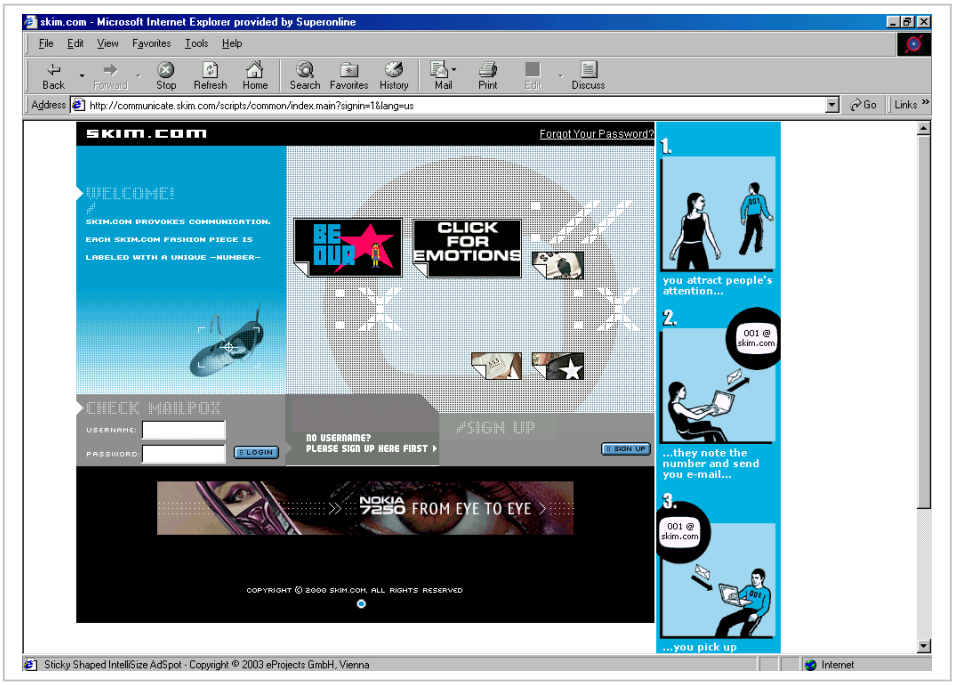

Figure 6. Skim.com web site – http://www.skim.com

Communication always constituted a need for humans and different media are being developed for answering this need: telephone, fax machine, television, printed publications etc. Clothing is in a similar way a human need and also serves as a indirect way of communication. However what we understand from clothing and communication today and how they may fuse into each other and turn into a different way of interaction can be regarded as a difficult task for design. Skim.com therefore stands as an example for design as a process of interaction. Moreover how design is

affected from developing technologies and how identity became a topic of discussion in the light of emerging information and communication technologies may be answered through such products.

4.3. Localization and Customization

As immaterial structures place the emphasis of design on interactions, identity is becoming an important issue today that needs to be analyzed within design. Although in virtual environments new identities are being created according to people's own will (Pantzar 15), this situation does not simply eliminate its importance, rather "[t]he newest technology and its multiple perspectives enable us to begin to understand more thoroughly than before our interactive dependence on other human beings and on nature" (Pantzar 16).

Culture in the new context of human identity became more global in terms of sharing common values but also rises the significance of individuality:

> "In the new turn of the revolution that began in the early decades of the twentieth century, culture is not a fixed ideology existing outside the individual […] Culture is what we do individually and together through our intentional operations and projects […] Universality in the new philosophy of culture is not achieved through consensus in a general ideology. Rather, universality is an expression of individuality placed in this context" (Buchanan, Branzi's Dilemma 19).

As culture is seen prom a perspective of diversity and individuality, products that fit various expectations of diverse users in single entities seem to fade away. Nowadays it is time to accept diversity of individuals and believing to the point that actually there is no model user or model consumer. Consumer segmentation became more and more difficult when new aspects that shape the communication society are

considered. Individuality is an important issue, which should not be ignored while making design decisions. This does not mean that custom production replaces the mass-production. Rather products became changeable, adjustable, and come into market with endless variations. The consumers are even not limited with the existing variations but they can have their product according to their personal choices.

Freeman refers to a 1987 dated article appeared in *Economist*, which stated, " 'The Factory' is being reinvented from scratch. Traditional production lines are being ripped apart to make room for flexible 'make anything' machinery" (91). The statement of the author is not wrong when we consider today's definition of mass consumption as seen in the example of Nike.

Nike introduced NIKEiD, where Nike users are able to purchase shoes according to their own likes. What Nike offers is a certain flexibility of color preference that a user may choose among the color palettes and see online how the shoe will look like before the purchase. Even lettering of up to 8 characters is possible to be placed on the shoe. There seem to be no need to go to shopping outside and make a decision among the existing shoes as an easier way is suggested through the web:

> "- From the NIKE iD homepage click on the product you would like to build. Remember, we have multiple pages of customizable products so be sure and check them all out.
>
> - Complete all of the customization steps and then click on 'Next Step: Review' to take a final look at your design […].
>
> - If everything looks good click on 'Add to Shopping Cart'" (Nikeid web site).

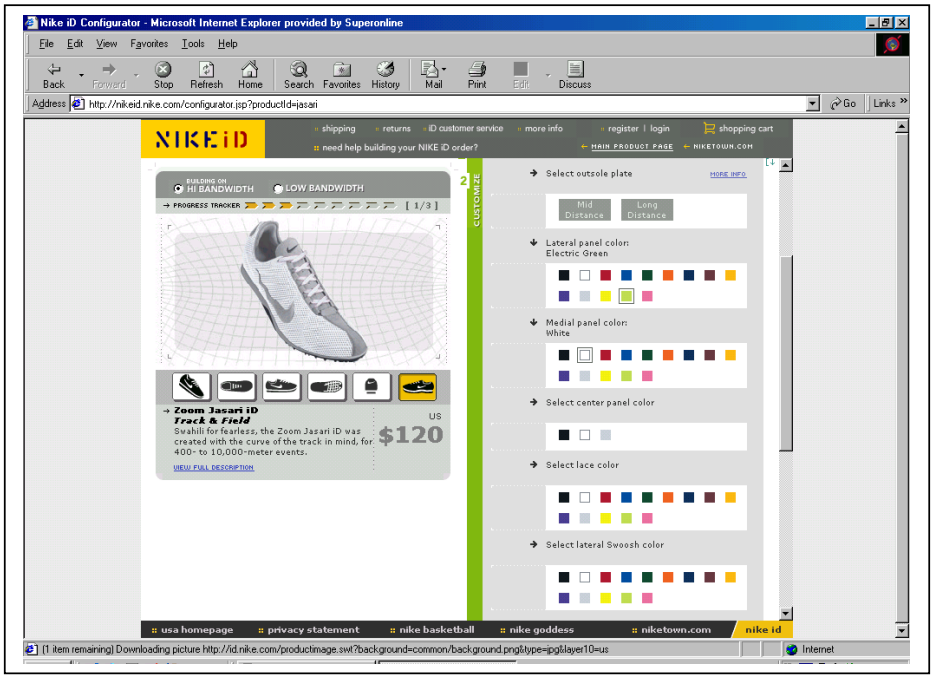

Figure 7. NIKEiD web site – http://nikeid.nike.com

NIKE iD provides a level of customization for the shoes, which was only possible in custom production, with the means of Internet technology. Online shopping seems to become superior over traditional shopping with customizable product designs. Such products not only support individual preferences and expression of one's identity to be appeared in designs but also add an enjoyment layer to design and use.

4.4. Enjoyment and Pleasure as a part of Function

As the experience and interaction provided by new design understanding is regarded as a part of the new definition of function, what users get out of these experiences have decisive importance.

Today, functional and ergonomic issues cover enjoyment and pleasure everyday objects posses to the user and as we build interaction with objects in a broad sense, we expect to get into emotional contact with them. They need to touch our senses and we have to feel that we love the product to buy it, to use it, and to feel it. However, how to achieve such qualities within the framework of design is very much related with how we approach design and how we approach function in the context of enjoyment and pleasure.

Defending human needs like enjoying and for the reconfiguration of the industrial design practice for the post-industrial society, Myerson defines “Three Rs: Redefining Function, Replacing the Machine, and Reasserting Values” (63). Especially reasserting values draws the new functions of the designers as they "will need to define and refine those tangible values that will inform the products, systems, environments and communications to underpin more sane and sustainable societies" (73).

Considering the areas, which Myerson mentions to redefine, replace, and reassert, the relation of these areas with the technology requires an intense analysis. As Pultar mentioned in his lectures *Art, Science and Technology*, technology is directly related to the value systems of human beings. The outcome of the activities is dependent on value system of people conducting the technology. This indicates that, the value system determines the product of technical activities. Therefore, reasserting values and the philosophy of technology may not be considered separately. For replacing machine, Myerson suggests “a conceptual shift to replace the machine at the heart of design thinking with a new aesthetic style based on environmental and ethical

consideration, not those of production and technology" (67). Although his words seem to be conflicting with the previously drawn relation with his three Rs and technology, the term 'technology' used in his words is more concentrated on production means and aesthetics coming from machine. However, with the humanization of the technology and seeing technology as a way of serving human needs and new understandings of design, it seems logical to draw the relation between replacing machine and the philosophy of technology under human values.

For the redefinition of function, John Makepeace argues that "[f]unction need a more generous interpretation. It has been too narrowly defined, it means more than just use. Enjoyment and pleasure are part of the function of an object too" (qtd. in Myerson 65). Today, we see that technology is more and more in duty for creating products that are enjoyable in terms of function.

Discussing the pleasure that one may posses from the products is highly related with the understanding of aesthetics. Aesthetics today seem to be not an added value or a visual element but rather an integral part of the current approaches to design:

> "Aesthetics in regard to any object […] is not an absolute and separate value. Rather, it is totally related to our ability to see a congruence among our intellectual expectations of an object's functional characteristics, our emotional need to feel that ethical and social values are met, and finally, our physical need for sensory stimulation" (Zaccai 8).

Aesthetic value of design, therefore, needs to be regarded as the enjoyment and pleasure one object gives to its user through its use. Technology or the way designers use technology need to allow user what they once referred as useful tool to be experienced as an entertainment toy (Kotro and Pantzar 38).

As seen in the skim.com example, clothing and communication may turn into a process of interaction through design; fashion and communication can also be seen as integrated to each other with recent mobile phones where enjoyment and pleasure are regarded as the core of their design understanding.

Nokia has recently introduced its new model 7250 with a built-in camera feature and demonstrate this feature with "[f]our fashion capitals snapped by four young designers. Their cities, their way" in its web site (Nokia 7250 web site). Being part of the fashion is boldly underlined in the way the sample pictures are taken.

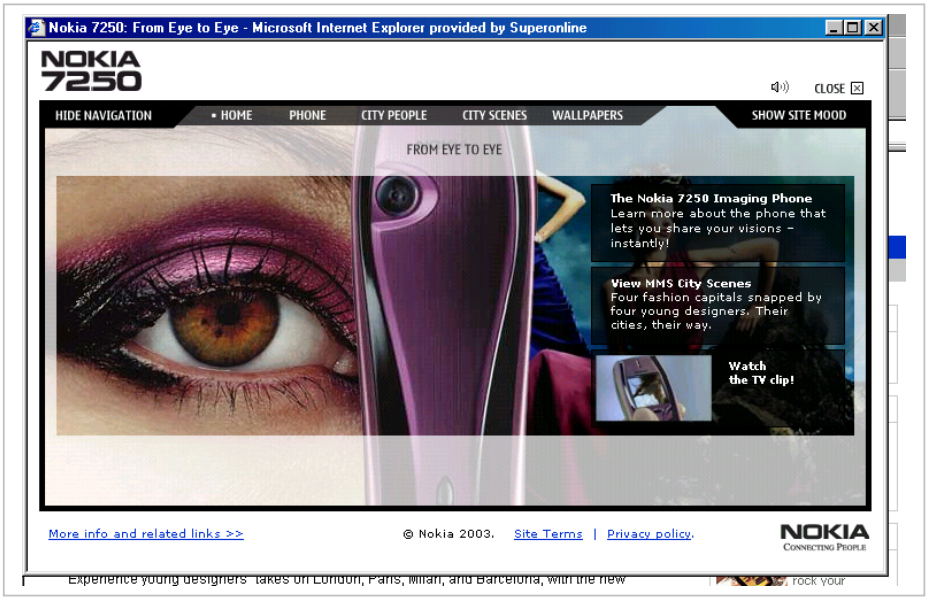

Figure 8. Nokia 7250 web site - http://www.nokia.com/from_eye_to_eye/flash.html

The camera feature of Nokia 7250 make it also an enjoyable electronic toy in the way that it allows the user share images taken with the phone with others and turn the experience into a pleasurable activity. According to author's personal interview with a Nokia 7250 user, the reason for buying the new model mobile phone was due

to his feeling psychologically uncomfortable. Rather than paying the same amount of money to a psychologist, his new Nokia 7250 made him feel happy, happier than a psychologist might make him. Whether it was a correct decision or not is still questionable; however one thing is clear that "Nokia succeeded in transforming mobile phone, which emphasized utilitarian user motives, to an object of pleasure and feelings" (Kotro and Pantzar 38).

4.5. Creation of Needs and Future Consumers

Under the new conceptions of design, one may conclude that designers turn developing technologies into functional objects – function as interaction and enjoyment. However designing objects, as such, also involves designing the needs towards such objects and designing the new consumers to use these objects. According to Kotro and Pantzar, "when a novel product is being imaged and planned, there is no such thing as a group of future consumers, only fictional ones. However, when imaging a future product, one can hardly avoid thinking up a user and a context of use for the new product. The consumer and user context are represented–either explicitly or implicitly–by an image, a sort of cultural landscape" (42).

An important issue in changing understandings of design is therefore creating scenarios for the future along with the products themselves. Scenarios are always created for design problems either based on qualitative market research about user motives and behaviors or based on the qualitative conceptions limited with designers' imagination. However when it comes to designing the future, design "should express cultural strengths that not only show where we came from, but

where people want to go. They should not reflect where technology wants to take us, but where we want to take technology with cultural significance" (Bruce, 71). This is where the importance of creating future needs and future consumers came from.

Whatever discussed so far under the current approaches to design (immaterial structures, process of interaction, localization, and enjoyment) are parts of creation of new needs. There was not a need of taking photographs with mobile phones or carrying the symbol of your identity on your clothes until they were designed that way. They are all created for the future consumers of the day they were designed.

Designs of tomorrow have to open new areas to be subject of design and create new needs to be served by new designs while keeping human values and social and cultural context in mind. Bringing better solutions for the existing problems has been regarded as a success for a designed product, however products will exist only by the continuous needs towards them. New designs should allow new areas to be subject for design and new consumers to be generated and to be served by new designs either through allowing new interactions, being specific for the user, being an enjoyable toy or any other attributes that are possible with the redefinition of function in the light of immaterial structures.

5. FUTURE ORIENTATION AND SCENARIOS FOR DESIGN

Previous chapters provided an understanding of changes in design with its current definitions and its evolving philosophy. Design and its relation with developing technologies and dynamics of social and cultural contexts have also been presented. While narrowing the analysis, immaterial structures and process of interaction in design, localization and customization, enjoyment as apart of the function and creation of future needs and future consumer have been discussed under current approaches to design. In the light of these analyses this chapter aims at providing a future orientation for design.

Firstly, as a common method used in futures studies and design, 'scenario building' is defined due to its being an integral part of the nature of design activity and being the general aim of any future oriented study. Subsequently, future orientations in design theory, design practice, and design education are proposed as a form of futures scenarios to provide a future vision for design.

Although education, profession and theory seem to be separated as individual fields of study, Wilsing and Wilsing suggest the integration of theory and practice into design education (365). For the future orientation of design in a broad perspective, they need to be discussed harmoniously together as they all interact with each other and shape the future of design together.

The aim of discussing scenarios and proposing future orientation for design in the light of the previously conducted analysis does not stand for the invention the future but it tries "to design the future […] [by] re-orient[ing] and re-conceptualis[ing] some existing drivers of change" (Manzini, qtd. in DFFN 26).

5.1. Scenario Building as a Part of the Design Process

The roots of scenario building can be found in cognitive psychology, which studies how the human brain represents information and brings solutions to the problems, and how individuals adopt to their environments (Hasdoğan, Scenario-building 135). In this sense, scenarios are bound to experienced events, characters, and environments and scenario building means developing of alternative stories for the future based on such experiences.

Hasdoğan defines scenarios used in product design as "a model of cross-section of time from the life of a yet-to-be-designed product, in which that product is purchased, used, stored, etc. in its physical and social environment" (Scenario Building 136). In relation to different aspects of product design, she defines five types of scenarios:

1. "Usage scenarios: Ergonomic aspect
2. Ritualistic scenarios: Cultural aspect
3. Psychographic scenarios: Marketing aspect
4. Technological scenarios
5. Environmental scenarios" (Scenario Building 138-139).

With the help of such scenarios designers visualize certain aspects beforehand, which may affect the production, usage, and marketing, that compromise the whole design process. Moreover, "in a scenario-based analysis, the investigator [designer in this case] can have a prospective approach and can imagine all sorts of events with many alternative interface ideas" (Hasoğan, User Models 31). Therefore different scenarios built in design help the designer to forecast probable conditions and turn these conditions into feedback for actions through the design process for successfully coping with any unwanted circumstances or adding further values to the end product.

A more recent approach to scenario building in the design domain is brought by Manzini and Jégou under 'design-orienting scenarios' (DOS). Manzini's definition of DOS is as follows:

> "In particular, the DOS have to propose a variety of comparable visions that have to be clearly motivated and enriched with some visible and (potentially) feasible proposals. And, finally, they have to be assessed. In other words: they have to be visions based on considerations that the 'scenario builder' may share with, and eventually build with, the potential 'scenario users', proposing them as an integral part of the scenario itself" (paragraph 14).

DOS have certain characteristics that make it different than the scenarios used in futures studies. The main difference is that scenarios developed in the framework of futures studies are 'policy-oriented scenarios' (POS) and they evaluate macro-scale changes in socio-technical systems to orient the consequent policies as briefly outlined in the second chapter. DOS are, on the other hand, micro-scale, specific for the selected products or services and refer to the context of life in which relevant actions take place. Another important difference comes from the participative characteristic of DOS where users are directly employed within the scenario developing process (Manzini paragraph 12-20). However what is in common is that

they both aim at providing shared visions of the future contexts, one on the society level and the other at the micro-scale of people's daily life.

5.2. Scenario Building for Understanding the Future of Design

Scenario building is closely related with visualization of the future. Either employed in design for the future of single products or in futures studies for the future of the whole society, scenarios help us to understand the future, to draw the picture of it, and to prepare ourselves or act accordingly.

Recently there have been several future oriented design studies, which appeared in the design domain. *DFFN - The Design for Future Needs Research Project* and *The SuSHouse Project -Strategies Towards a Sustainable Household* should be mentioned first. Both of the projects are European research projects and mainly employ design-orienting scenarios because of their micro-scale approach to design of some products and their relation with user. With their workshops and case studies, they look at near future for successfully addressing some of the specific issues in design like sustainability and user needs.

Understanding the future of design, however, still remains relatively untouched in the wide picture frame of changes in technology and social, cultural contexts. For this reason, some general future orientations are proposed within this chapter. Although the content is design itself and there is a design-orientation in essence, the significance of the study comes from the method applied throughout the study, as it is closer to futures studies with its focus on social, cultural and technological concerns. Within the study in general and within the proposed future orientations in

this chapter, design is not deduced to single products or changes in several domains; rather, overall design theory, design practice, and design education are considered for the analysis.

5.3. Proposed Future Orientation in Design Theory, Design Profession, and Design Education

To analyze the future of design, the definitions given in the fourth chapter under current approaches to design are used to make their projections to future and suggest any alterations in design theory, design profession, and design education. As theory, practice, and education of design are bound to each other and analyzed together, rather than presenting their future orientation separately and subsequently, they are placed next to each other in a 5 by 3 matrix so that it may become visible and easy to follow how the changes in design profession might effect the nature of design education or how design education needs to integrate theory and practice in the future circumstances. For this reason rows of the matrix are indexed by the title of the areas namely,

- Design of Material Objects versus Design of Immaterial Structures
- Design as Process of Interaction
- Localization and Customization
- Enjoyment and Pleasure as a Part of the Function
- Creation of Needs and Future Consumers

For each area, some key words are provided in italics and the columns of the matrix are indexed by the proposed future orientations in design theory, design practice, and design education in the given order.

Design of Material Objects versus Design of Immaterial Structures			
Keywords	**Design Theory**	**Design Profession**	**Design Education**
Immateriality in human life	Needs are redefined with new values and lifestyles so that design theory will not only deal with immaterial structures in solution phase like design of immaterial end products but also in formulation of new design problems for immaterial realm.	Design of immaterial processes will be the responsibility of designers who were designing physical artifacts. Therefore new layers will be added in the design profession for combining natural with artificial, real with virtual in design.	Design education will alter itself while addressing the changes in design theory and design profession. Hence, design problems given at schools will consider design of immateriality in human life with new approaches and techniques.
Expansion and integration	Design of immaterial structures will be evaluated not only as a change in nature of design but more importantly as an expansion for design theory and integration of new understandings, which were once regarded as separate.	Considering service design along with design of physical products became important issues for design profession. Therefore designers will be required to expand their capabilities and collaborate with professionals from many other disciplines.	To understand the evolving human nature with physical and immaterial dimensions, interdisciplinary nature of design education will gain more importance with an emphasis on integrating social and future oriented studies.

Societal vision for technology	Researches in design theory in relation to developing technologies will provide new societal visions and social shaping of technology will be more important than approaches to technology as shaping the values and lifestyles of society.	Demand for knowledge on production techniques or material use will keep on rising with a more intense analysis on the potentials of ICT for serving society and their ways of application in design domain will enhance the design profession.	Workshops where physical models are produced are being replaced by computerized modeling opportunities. However for building models of immaterial structures will require new (perhaps virtual) environments where the social understandings of ICT are tested and evaluated.

Design as Process of Interaction			
Keywords	**Design Theory**	**Design Profession**	**Design Education**
Interaction with the life-world	Interaction as a process in design is widely regarded as human-machine relation. This vision will be extended to include machine-machine interaction and human-human interaction in design philosophy.	Design profession has to do with enabling interactions through design. Designers in this respect will not only design artifacts that help itsuser or extend his/her capacities, but also enable them to build new interactions with the life-world.	Looking at design as a process of interaction will expand the design education towards a multidimensional planning process, which employs not only physically existing user types but also their potential experiences to be considered and planned within the design process.

Human-human interaction	Especially in the realm of human-human interaction, design will function as an active mean rather than a passive ingredient to raise its importance in the communication society similar to its role in the consumption society provided by physical products.	Designing new ways of interactions among people will be the new task for designers in communication society. In this sense, designing the mediums for interaction will turn to designing the interactions and experiences that may require certain mediums.	Importance of human-human interactions and experiences through design will make the design education more concentrated on developing ways of usage scenarios where the human being and its relation with the built environment are the main actors.
Human-technology interaction	For an extension of human-machine interaction and as a new phase of machine-machine interaction, intelligence of products will be provided through design by making use of new technologies with a human-centered perspective.	Design profession will make use of new technologies not only for improving functions of some products but also for turning these functions into use by designing them accessible, understandable and adoptable to human cognition.	Along with the study of new production techniques and new material possibilities, questioning and evaluating these developments in respect to their potential effects on human life will be an integral part of design education.

Localization and Customization			
Keywords	**Design Theory**	**Design Profession**	**Design Education**
Personalization	What may be drawn in relation to changes in any area related with design is a higher level of complexity and individuality to be coped with in the future. Although new possibilities emerge with new technologies in terms of connections and communications, design theory will focus on the personalization of everything.	Design profession seems to be busy with filling identical boxes with different products. That is to say, for the near future there is not an exact possibility of serving every individual with different products but providing different ways for users to identify themselves through personalizing their objects will gain importance for the design profession.	Students of design education will be required to think of alternative solutions and varieties in usage scenarios in a broader sense, which may be achieved by the configuration of design problems with ill-defined structures and addressing a variety of personalities.

Diversity	The diversity among individuals and different identities constructed within real and virtual lives will affect the design theory to shape its understanding of users from something to be easily segmented through age, sex, or income level to a crystallized and dynamic structure.	With the construction of new virtual societies where a person is entirely free to be anyone, design profession will consider such interchangeable and even yet-to-be-generated identities for the design of material objects and more importantly for the design of immaterial structures.	Virtually built environments, virtual societies, virtual identities and the role and content of design in such contexts will be added in design curricula and became a part of everyday design problems.
Flexibility	The terms 'globalization' and 'universality' in design theory will be re-defined with an emphasis on the construction of such terms on individuality and diversity provided by flexibility in design.	For the design profession, main changes will be in demand for higher levels of flexibility and adoptability within the new definition of 'standardization'.	Although based on an old cultural background, education of design will be flexible in structure and dynamic in content to be able serve its very basic aim: imagining the future.

Enjoyment and Pleasure as a Part of the Function			
Keywords	**Design Theory**	**Design Profession**	**Design Education**
Emotions and feelings	Discovering the importance of feelings and emotions of human beings at a time where the computerization is changing our lives will be critical issues for design philosophy.	Design profession will consider the use-stage and emotional contact stage as a continuation of the design and production stages.	Re-examination of standards and human factors with a focus on human feelings and expectations will find their place in design education and became as important as analytic analysis of design projects
Humane technology	The humane notion of design will be reexamined in design philosophy that draws the picture of future environments with products that are intelligent not only in terms of their technology but also in their set in functions of understanding and responding human needs.	Design profession will make use of ICT for the purpose implied in its name: 'information and communication'. Developing technologies will be used for allowing communications to be built not only in wireless mediums but also in a very natural way: through human feelings.	Beyond the physical possibilities arriving with the developments in technology, how to use these technologies and turn them into usable media will cover an important portion of the design education.

Enjoyment	Design theory will look at design as a process to enjoy people with its outcomes and give pleasure with their use.	Design profession will gain an important notion that is connecting people with their own materiality and drawing the path for rediscovering the bodily pleasure.	Design education will direct design students to think of how they may overcome the depressing material crowd of our lives through design.

Creation of Needs and Future Consumers			
Keywords	**Design Theory**	**Design Profession**	**Design Education**
Designing consumers	Thinking of consumers as not waiting in static mode but being shaped with the contribution of design will be the way for design theory to approach the actors of design problems.	Design profession will be heading to designing and producing products that provide freedom to the user to shape his or her life beyond designer's own thoughts or propositions.	Design students need to understand that they will no longer serve the existing consumers and their designs should allow new areas to be subject for design and new consumers to be generated and to be served by new designs.

Serving the whole society	Once marginalized and underserved populations will gain decisive importance for design theory to address human values in cultural context to cover the whole society.	Responsibility of design profession will go beyond the high rate of sales towards high number of users from different backgrounds and various capability levels.	Universal design approach in design education will cover the social aspects along with disability and sustainability issues.
Futures thinking in design	The time scale between present and the future will be extended in design theory. Design will not only aim at visualizing the future circumstances of single products or processes but also the future of design in general.	Design profession will be able to take any precautions or make any alterations that may be found necessary after the analysis of the future of design in design philosophy.	While educating the designers of tomorrow, it is a necessity to integrate future orientation in the very basic steps of the education with the aim of approaching to future as not the same of today like our time that is not a simple continuation of the past.

All of the proposed future orientations in design theory, design education, and design profession find their roots in previously conducted analysis of current approaches in design and design with its expanding relation with other fields namely changes in technology and society.

The analysis of changes in technology and society is an important notion of futures studies at the end of which futures scenarios are achieved for a broad picture of society in future circumstances. In a similar way, scenario building is an integral part of design, where user needs and their actions in relation to to-be-designed products are imagined as an early stage of design activity. Therefore, Figure 9 depicts the method applied in this study and shows how scenario building in design may be linked with the futures studies approach to draw the futures scenarios for design and achieve the aim of the thesis.

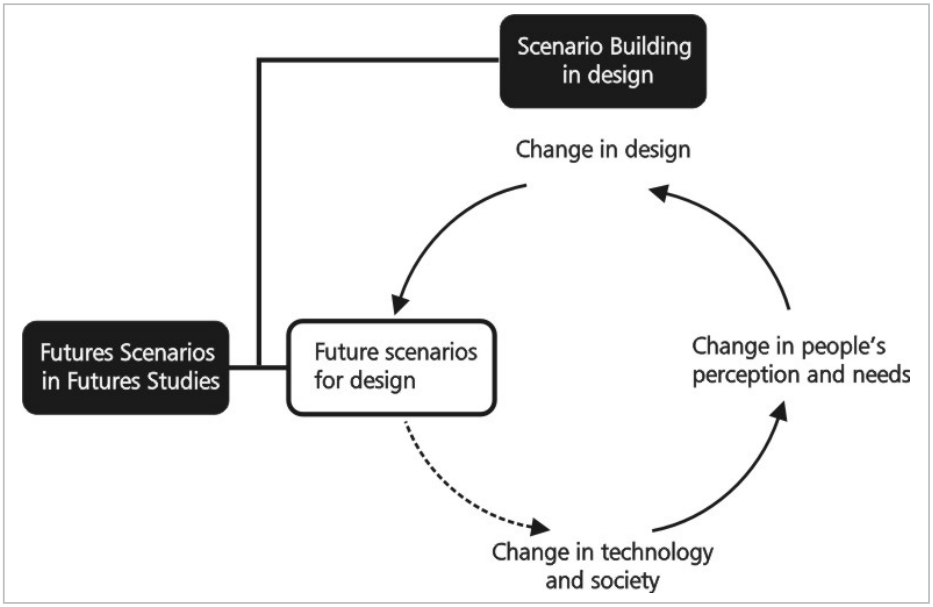

Figure 9. Method of Future Orientation in Design

In the first chapter in Figure 1, the roots of change in design were presented in relation to changes in technology and society and changes in people's perception and needs. Futures scenarios for design, in this respect, were seen as a link between change in design and changes in technology and society for future circumstances. Figure 9 takes Figure 1 as a base and shows the way of achieving these futures scenarios for design while creating a bridge between design and futures studies fields in terms of scenarios employed in both areas and providing a future orientation for design scenarios to draw its own future.

6. CONCLUSION

This thesis is an attempt to provide future orientations in design. Futures visions are regarded as important elements of human life to prepare itself for the potential changes in the future and take necessary precautions in terms of actions or inactions. Moreover, the future is not considered as simply waited for but altered or designed today.

Futures Studies is an interdisciplinary body of research aiming at evaluating changes in social and technological systems to draw futures scenarios for necessary policy alternatives and their probable and preferable results in the future. Therefore, future orientations in design have been presented with a futures study approach.

While trying to draw future orientations, five current approaches to design have been addressed. These are the design of material objects versus design of immaterial structures, design as process of interaction, localization and customization, enjoyment and pleasure as a part of the function, and finally creation of needs and future consumers. In light of the analysis of these current approaches, future orientations in design have been drawn for design theory, design profession, and design education.

It is concluded that in essence, design holds a future approach with its aim to imagine the future. Therefore, as design tries to give shape to products and human

environments with all interactions and experiences, design can also design its own future in its own right and in the light of futures approach barrowed from futures studies.

Outcomes of future orientations in design will help designers, design educators, and anyone having a role in any part of the design domain to have a future vision and prepare themselves and understandings of design for the future conditions.

A further step may be to propose ways of integrating future orientations in every aspect of design and generating policy alternatives to achieve preferable futures for design.

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